# VAAGDEVI COLLEGE OF ENGINEERING

(Autonomous)

Bollikunta, Khila Warangal (Mandal), Warangal Urban - 506 005 (T.S)

## DEPARTMENT OF CIVIL ENGINEERING

## MINUTES OF BOARD OF STUDIES MEETING
held on 29.01.2024 at 09:30AM

**Members Present**

| S.No | Name and Address | Designation | Signature |
|---|---|---|---|
| 1. | Dr. G. Dineshkumar<br>Associate Professor, Dept. of Civil Engineering, VCE, Warangal. | Chairman | |
| 2. | Dr. K. Manjula Vani<br>Professor , Dept. of Civil Engineering, JNTUH CEH, Hyderabad. | Member<br>(University Nominee) | |
| 3. | Dr. P. Rathish Kumar<br>Professor, Dept. of Civil Engineering, NIT, Warangal. | Member<br>(Subject Expert) | |
| 4. | Dr. S. Sunil Pratap Reddy<br>Associate Professor,<br>Dept. of Civil Engineering, KITS, Warangal | Member<br>(Subject Expert) | |
| 5. | Er. A. Nagender Rao<br>Superintendent Engineer, R&B Department, Hanamkonda. | Member<br>(Representative from Industry) | |
| 6. | Dr. K. Thirupathi Rao<br>Professor,<br>Dept. of Civil Engineering, VCE. Warangal. | Member<br>(Faculty) | |
| 7. | Mr. Syed Riyaz<br>Assistant Professor, Dept. of Civil Engineering, VCE, Warangal. | Member<br>(Faculty) | |
| 8. | Er. S. Arun Kumar<br>Assistant Executive Engineer,<br>Mission Bhagiratha SD, Thorrur. | Member<br>(Alumni) | |

The following decisions were taken during the Board of Studies meeting,

1. Approved the Course structure and Syllabi of B. Tech – Civil Engineering for III - Year (I & II Semester) and IV - Year (I & II Semester) under R22 - Regulation.
2. Approved the substitute subjects/additional subjects for the students who have been readmitted from R18 regulation to R22 regulation and R20 regulation to R22 regulation.

The chairman of Board of studies thanked all the members for their Suggestions and valuable guidance towards framing of Course Structure and Syllabi under R22 Regulation.

**Chairman/BoS**

CHAIRMAN
Board of Studies, Civil Engg. Dept.,
VAAGDEVI COLLEGE OF ENGINEERING
Bollikunta, Warangal (T.S)-506 005

# VAAGDEVI COLLEGE OF ENGINEERING

## (AUTONOMOUS)

## B.Tech. in CIVIL ENGINEERING

## COURSE STRUCTURE - (R22 Regulations) - III & IV YEAR

**Applicable from Academic Year 2022-2023 admitted batch**

### III YEAR I - SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1. | | Structural Analysis - II | 3 | 0 | 0 | 3 |
| 2. | | Geotechnical Engineering | 3 | 0 | 0 | 3 |
| 3. | | Structural Engineering -I (RCC) | 3 | 0 | 0 | 3 |
| 4. | | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5. | | Transportation Engineering | 3 | 0 | 0 | 3 |
| 6. | | Hydrology and Water Resources Engineering | 3 | 0 | 0 | 3 |
| 7. | | Transportation Engineering Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Geotechnical Engineering Laboratory | 0 | 0 | 2 | 1 |
| 9. | | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **21** | **0** | **4** | **20** |

### III YEAR II - SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1. | | Environmental Engineering | 3 | 0 | 0 | 3 |
| 2. | | Foundation Engineering | 3 | 0 | 0 | 3 |
| 3. | | Structural Engineering -II (Steel Structures) | 3 | 0 | 0 | 3 |
| 4. | | **Professional Elective – I**<br>1. Design of Hydraulic Structures<br>2. Advanced Water Resources Engineering<br>3. Ground Water Hydrology | 3 | 0 | 0 | 3 |
| 5. | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6. | | Environmental Engineering Laboratory | 0 | 0 | 2 | 1 |
| 7. | | Computer Aided Design Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Advanced English Communication Skills Laboratory | 0 | 0 | 2 | 1 |
| 9. | | Industry Oriented Mini Project / Internship | 0 | 0 | 4 | 2 |
| 10. | | Environmental Science | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **0** | **10** | **20** |

*** Environmental Science in III Year II Semester should be Registered by Lateral Entry Students Only.**

1. 29/1/2024
2. 30/1/24
3. 29/1/24
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7. 30/1/24
8.

# VAAGDEVI COLLEGE OF ENGINEERING

**(AUTONOMOUS)**

**B.Tech. in CIVIL ENGINEERING**

**COURSE STRUCTURE - (R22 Regulations) - III & IV YEAR**

**Applicable from Academic Year 2022-2023 admitted batch**

## IV YEAR I - SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1. | | Quantity Survey & Valuation | 2 | 0 | 0 | 2 |
| 2. | | Project Management | 2 | 0 | 0 | 2 |
| 3. | | **Professional Elective – II**<br>1. Prestressed Concrete<br>2. Earth Retaining Structures<br>3. Repair and Rehabilitation of Structures | 3 | 0 | 0 | 3 |
| 4. | | **Professional Elective – III**<br>1. Design of Bridges<br>2. Elements of Earthquake Engineering<br>3. Ground Improvement Techniques | 3 | 0 | 0 | 3 |
| 5. | | **Professional Elective – IV**<br>1. Building Information Modelling<br>2. Green Building Technologies<br>3. Remote Sensing & Geographical Information System | 3 | 0 | 0 | 3 |
| 6. | | Open Elective - II | 3 | 0 | 0 | 3 |
| 7. | | Civil Engineering Software Laboratory | 0 | 0 | 2 | 1 |
| 8. | | Project Stage - I | 0 | 0 | 6 | 3 |
| | | **Total Credits** | **16** | **0** | **8** | **20** |

## IV YEAR II - SEMESTER

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1. | | **Professional Elective – V**<br>1. Solid Waste Management<br>2. Smart Cities Planning and Management<br>3. Air pollution | 3 | 0 | 0 | 3 |
| 2. | | **Professional Elective – VI**<br>1. Airports, Railways and Waterways<br>2. Pavement Analysis & Design<br>3. Pavement Asset Management | 3 | 0 | 0 | 3 |
| 3. | | Open Elective - III | 3 | 0 | 0 | 3 |
| 4. | | Project Stage – II including seminar | 0 | 0 | 22 | 11 |
| | | **Total Credits** | **9** | **0** | **22** | **20** |

1. 29/1/2024 2. 30/1/24 3. 29/1/24

4. 5. 6.

7. 30/1/24 8.

# VAAGDEVI COLLEGE OF ENGINEERING

## (AUTONOMOUS)

## B.Tech. in CIVIL ENGINEERING

## COURSE STRUCTURE - (R22 Regulations) - III & IV YEAR

**Applicable from Academic Year 2022-2023 admitted batch**

## OPEN ELECTIVES OFFERED BY THE DEPARTMENT

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1. | | Disaster Preparedness & Planning Management | 3 | 0 | 0 | 3 |
| 2. | | Building Technology | 3 | 0 | 0 | 3 |
| 3. | | Environmental Impact Assessment | 3 | 0 | 0 | 3 |
| 4. | | Sustainable Infrastructure Development | 3 | 0 | 0 | 3 |
| 5. | | Environmental Pollution and Control | 3 | 0 | 0 | 3 |
| 6. | | Energy Efficient Buildings | 3 | 0 | 0 | 3 |

1. 29/1/2024 2. 30/1/24 3. 29/1/24

4. 5. 6.

7. 30/1/24 8.

# VAAGDEVI COLLEGE OF ENGINEERING

(Autonomous)

## TRANSPORTATION ENGINEERING LABORATORY

**B.Tech - III Year I – Semester**

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 2 | 1 |

**Course Objectives:**

- To provide knowledge on test of aggregates
- Impart properties of bitumen by various tests
- To understand Mix Design of sub base and bituminous layer
- To gain knowledge on different Traffic Surveys

**LIST OF EXPERIMENTS**

**Tests on aggregate**

1. Shape Test - Flakiness and Elongation Index
2. Los Angeles Abrasion Test
3. Los Angeles Attrition Test

**Tests on bitumen**

4. Penetration and Softening Point
5. Ductility Value
6. Flash and Fire Point

**Mix design**

7. Marshall's Stability sample preparation and Testing

**Traffic Surveys**

8. Volume studies at Mid blocks and Intersection
9. Speed Studies using Spot speeds
10. Parking studies

**Course Outcomes:** At the end of this course, the students will able to:

**CO1:** Acquire skills in testing the aggregates
**CO2:** Know the procedure to design bituminous roads.
**CO3:** Measure the physical properties of bitumen for their suitability as road material.
**CO4:** Analyze the traffic based on traffic surveys.

**REFERENCE BOOKS:**


1. Khanna, S.K., Justo, C.E.G and Veeraragavan, A, 'Highway Engineering', Nem Chand & Bros, 10th Edition, 2017
2. Srinivasa Kumar, R, Textbook of Highway Engineering, Universities Press, First Edition 2011.
3. Kadiyalai, L.R., 'Traffic Engineering and Transport Planning', Khanna Publishers, First Edition, 1999


**IS CODES:**

- IS 1201 -1220 (1978) "Methods for testing tars and bituminous materials"
- IRC SP 53 -2010 "Guidelines on use of modified bitumen"
- MS-2 Manual for Marshalls Mix design 2002

**Online Resources:**

1. https://ts-nitk.vlabs.ac.in/transportation-engineering/

# VAAGDEVI COLLEGE OF ENGINEERING

(Autonomous)

## GEOTECHNICAL ENGINEERING LABORATORY

**B.Tech - III Year I – Semester**

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 2 | 1 |

**Course Objectives:**

- To find out the method and practices of testing properties of the soil
- To learn the principles of permeability of soil
- To study the procedures of testing shear strength parameters of soil
- To obtain compression test on soil.

**LIST OF EXPERIMENTS**

1. Atterberg Limits (Liquid Limit, Plastic Limit, and shrinkage limit)
2. a) Field density by core cutter method and
   b) Field density by sand replacement method
3. Determination of Specific gravity of soil Grain size distribution by sieve analysis
4. Permeability of soil by constant and variable head test methods
5. Standard Proctor's Compaction Test
6. Determination of Coefficient of consolidation (square root time fitting method)
7. Unconfined compression test
8. Direct shear test
9. Vane shear test
10. Differential free swell index (DFSI) test

**Course Outcomes:** At the end of this course, the students will able to:

CO1: Identify and classify soils with reference to their characteristics
CO2: Learn about grain size distribution using sieve analysis
CO3: Calculate the permeability value of the soil
CO4: Determine the shear strength properties of the soil

**REFERENCE BOOKS:**


1. Murthy, V.N.S., "Soil Mechanics and Foundation Engineering", CBS Publishers Distribution Ltd., First Edition, 2018
2. Gopal Ranjan and Rao, A.S.R., "Basic and Applied Soil Mechanics", New Age Ltd. International Publisher, 3rd Edition, 2019.
3. Punmia, B.C., Ashok Kumar Jainand Arun Kumar Jain "Soil Mechanics and Foundations", Laxmi Publications Pvt. Ltd. New Delhi, 17th Edition 2019.


**Online Resources:**

1. https://smfe-iiith.vlabs.ac.in/
2. https://nptel.ac.in/courses/105/101/105101160/

# VAAGDEVI COLLEGE OF ENGINEERING

(Autonomous)

## ENVIRONMENTAL ENGINEERING LABORATORY

**B.Tech - III Year II – Semester**

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 2 | 1 |

**Course Objectives:**

- To conduct test on determination of water standards
- To understand the procedure of determining various parameters of water
- To impart knowledge on evaluating chloride content
- To attain knowledge of B.O.D and C.O.D determination

**LIST OF EXPERIMENTS**

1. Determination of pH
2. Determination of Electrical Conductivity
3. Determination of Acidity
4. Determination of Alkalinity
5. Determination of Total Hardness
6. Determination of Chlorides
7. Determination of optimum coagulant Dosage
8. Determination of Dissolved Oxygen
9. Determination of COD
10. Determination of BOD

**Course Outcomes:**On completion of the course, the students will be able to:

**CO1:** Test water to determine pH and conductivity

**CO2:** Estimate quality of water

**CO3:** Determine chloride content in water

**CO4:** Determine BOD and COD of water

**REFERENCE BOOKS:**


1. Howard S. Peavy, Donald R. Roweand George Tchobanoglous, "Environmental Engineering", McGraw Hill, First Edition 2017
2. Duggal, K. N., Elements of Environmental Engineering, S. Chand & Co., 3rd Edition, 2008.


**Online Resources:**

1. https://ee1-nitk.vlabs.ac.in/List%20of%20experiments.html

# VAAGDEVI COLLEGE OF ENGINEERING

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## COMPUTER AIDED DESIGN LABORATORY

**B.Tech - III Year II – Semester**

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 2 | 1 |

**Course Objectives:**

- Learn the usage of any fundamental software for design
- Create geometries using pre-processor
- Analyze and Interpret the results using post processor
- Design the structural elements

**LIST OF EXPERIMENTS**

1. Analysis & Design determinate beams using a software
2. Analysis & Design of fixed beam using a software
3. Analysis & Design of Plane Frames
4. Analysis & Design of space frames
5. Analysis & Design of residential building
6. Analysis & Design of Roof Trusses
7. Design and detailing of built up steel beam
8. Developing an excel template for foundation design
9. Detailing of RCC beam and RCC slab
10. Detailing of RCC column and RCC footing

**Course Outcomes:** On completion of the course, the students will be able to:

**CO1:** Analyse and design the beams and frames
**CO2:** Design the building under all loading conditions
**CO3:** Analyse the roof truss and built up steel beams
**CO4:** Draw the detailing of beam, slab, Column and Footing.

**REFERENCE BOOKS**


1. B.C. Punmia. Ashok K. Jain and Arun K. Jain, "Limit State design of Reinforced Concrete", Laxmi Publications (P) Ltd., 2nd Edition, 2016
2. Unnikrishnan Pillai and Devdas Menon, "Reinforced Concrete Design", Tata McGraw Hill Publishing Company Ltd., 3rd Edition, 2017
3. N. Krishnaraju, "Design of Reinforced Concrete Structures, IS: 456-2000", CBS Publications, 4th Edition, 2019


1. 29/1/2024 2. 30/1/24 3. 29/1/24

4. 5. 6.

7. 30/1/24 8.

# VAAGDEVI COLLEGE OF ENGINEERING

(Autonomous)

## CIVIL ENGINEERING SOFTWARE LABORATORY

**B.Tech - IV Year I – Semester**

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 2 | 1 |

**Pre-Requisites:** Structural Engineering - I & II

**Course Objectives:**

- Learn the usage of software for analysis and design
- Estimate the Multi storey buildings using excel template
- Analyze and Interpret the results using post processor
- Design the structural el0ements

**LIST OF EXPERIMENTS**

1. Three dimensional modelling of a building using software.
2. Rendering of buildings using software.
3. Planning and Estimation of Multi-storey buildings and development of Excel Template.
4. Digitization of Maps using software.
5. Creation of Thematic Maps using software.
6. Analysis of continuous Beams
7. Analysis and Design of Multi storey Buildings
8. Analysis of steel framed structure.
9. Demonstration to Analysis of different types of Bridge structures.
10. Demonstration to Finite Element Analysis software.

Note : Open/education/academic version of software can be used.

**Course Outcomes:** On completion of the course, the students will be able to:

**CO1:** Analyse the beams and framed structure
**CO2:** Analyse the building under all loading conditions
**CO3:** Analyse the steel frame structures
**CO4:** Acquire knowledge on finite element analysis software.

**REFERENCE BOOKS**


1. B.C. Punmia. Ashok K. Jain and Arun K. Jain, "Limit State design of Reinforced Concrete", Laxmi Publications (P) Ltd., 2nd Edition, 2016
2. Unnikrishnan Pillai and Devdas Menon, "Reinforced Concrete Design", Tata McGraw Hill Publishing Company Ltd., 3rd Edition, 2017
3. Datta B.N. Estimating and Costing, Charator Publishing House, 28th Revised Edition,2016